

A Call To Arms

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Appeared in the volume 7.1 (spring 2003) issue of the IBE Newsletter

They say an expert is someone who carries a briefcase and comes from more than 50 miles away. Maybe that's because the people we know from around here we know too well to admire. We know all the mistakes they've made and we know as much about any subject as they know. An expert must know more than we do, so the folks from around here can't be experts.

It seems that there are a lot of experts about biological engineering from more than 50 miles away. Jim Dooley just told us the other day about an electrical engineering professor from MIT who came to talk to the ABET council about biological engineering. His talk was supposed to stimulate thought about this new field.

And then there is the observation that, at least for a time, whenever an educational department wanted to strengthen its biological engineering efforts, faculty from chemical engineering were hired. This isn't meant to be a diatribe against chemical engineers, because they really have a lot to contribute, but do they really know more about biological engineering than we do?

The chemical engineering definition of biological engineering is really tripped toward the subcellular, cellular, and tissue engineering side of biology. It's a definition that fits its chemical engineering roots very well. People pushing for this definition of biological engineering have, over the years, become influential in various governmental agencies and educational institutions through professional activities. Because of this, we now see their definition of biological engineering becoming the core of officially-recognized definitions.

What is missing from these definitions of biological engineering is the overall systems concepts that take into account the myriad of responses of biological units to the integrated environments in which they find themselves. Cells and tissues are treated as unit operations rather than as players in microecological complexes.

When people such as the MIT professor first become introduced to biological engineering concepts, they think they have found virgin territory. Without full appreciation for the thoughts, words, and actions taken by, for instance, members of IBE, they believe that they can contribute to the formation of this new field without extensive research.

It is time for us to realize that the experts in biological engineering do not come from (figuratively) 50 miles away. The experts are our fellow IBE members, and the society that possesses the most thoughtful, well-developed concepts about biological engineering is IBE.

It makes no sense to invite keynote speakers to the IBE meeting to speak about what is included in biological engineering if the speakers know less about the subject than we do. Also, it makes no sense to sit and listen to an electrical engineering professor talk about biological engineering as if it were an entirely new field. Additionally, it makes no sense for us to accept as definitions of biological engineering anything other than the definition that Norm Scott so painstakingly led us to agree on.

This is not meant to criticize any individual member of IBE. However, it is meant to be a call-to-arms. IBE must begin to act as the repository of biological engineering information. We should act as if we are the experts in biological engineering, and that the others have a ways to go to catch up to us. We must begin to assert that what we know about biological engineering is what needs to be known. We must be confident about this.

We must have literature that defines biological engineering and includes numerous examples from all kinds of applications. We must make sure that we don't forget the literature that we have already developed, including definitions, DNA of Biological Engineering, Proceedings of Annual Meetings, recruiting brochures, and Newsletters. And we must confidently introduce others to this literature. If it all can be archived on the IBE website, then all we need to remember is www.ibeweb.org.

So, I urge IBE members to:

1. Become involved in other circles where biological engineering topics are likely to be discussed.
2. Act confidently as the experts in biological engineering.
3. Use the literature that we already have developed rather than wait for new.
4. Remember that it took a lot of time, effort, and discussion to get to where we are; let's not minimize what we have accomplished.